SHTENNIKOV, F.V.

USSR/ Engineering - Grinding tools

Card 1/1 Pub. 103 - 13/19

Authors : Shtennikov, F. V.

Title : Universal attachment for grinding internal facets

Periodical : Stan. i instr. 2, page 33, Feb 1955

Abstract : The development of an attachment for grinding internal facets is briefly reported. The mode of operation and the advantages offered by this new device are described. Drawing; illustration.

Institution: .....

Submitted: .....

SHTENNIKOV, F.V.

Active worker of the Office for the Promotion of Industrial Efficiency and Inventions. Izobr.i rats. no.7:12-13 Jl '58. (MIRA 11:9)
(Gorkiy--Automobile industry)

44056

S/863/62/000/000/006/008
D207/D308

3,9000

AUTHORS: Yanevich, Yu.M., Shtennikov, Yu.V. and Yagupov, I.G.

TITLE: Modeling of the processes of radiowave propagation over the earth's surface

SOURCE: Modelirovaniye yavleniy v atmosfere i gidrosfere; trudy Pervoy mezhduvedomstvennoy konferentsii 22-26 noyabrya 1960 g. Moscow, Izd-vo AN SSSR, 1962, 67-82

TEXT: The electrodynamic method of modeling ground-wave propagation was employed: the dimensions of obstacles, the wavelength and the electrical properties of the ground were scaled up or down. The phase characteristics of the waves but not their amplitudes were investigated. The effect of the geometrical dimensions of an obstacle was found using 3000 Mc/s waves travelling from a transmitting aerial (a quarter-wave copper pin) over a path represented by an aluminum sheet. The measured phase shift due to a hemispherical aluminum obstacle agreed satisfactorily with theoretical predictions. In another series of tests the effect of a change in the

Card 1/2

Modeling of the processes ...

electrical properties of the ground (e.g. at the sea-land boundary) on the phase of a ground wave was studied. The beat method was used at 300 Mc/s to compare the phases of a wave which travelled partly over aluminum sheets (representing a change of the electrical properties) and a wave which did not. Again, the results of the model experiment agreed with theoretical calculations. There are 16 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

Card 2/2

KALLISTOV, O.V.; SHTENNIKOVA, I.N.

Relation between molecular weight and intrinsic viscosity of solutions of poly-p-tert-butylphenylmethacrylate in bromobenzene and carbon tetrachloride. Vysokom. soed. 1 no.6:842-845 Je '59. (MIRA 12:10)

1.Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Acrylic acid) (Molecular weights) (Viscosity)

TSVETKOV, V.N.; SHTENNIKOVA, I.N.

Flow birefringence of poly-para-tert.butylphenyl methacrylate solutions. Vysokom.soed. 2 no.5:646-657 My '60. (MIRA 13:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Methacrylic acid) (Refraction, Double)

TSVETKOV, V.N.; SHTENNIKOVA, I.N.

Form of ethylcellulose molecules. Vysokom.soed. 2 no.5:808-816 My '60. (MIRA 13:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Cellulose--Optical properties)

TSVETKOV, V.N.; SHTENNIKOVA, I.N.

Flow birefringence of nitrocellulose solutions. Part 3. Vysokom.soed. 6 no.2:304-309 F '64. (MIRA 17:2)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

[redacted], V.N.; [redacted]OVA, I.N.

Flow birefringence of cellulose trifluoroacetate solutions. Vysokom. soed. 6 no.6:1041-1046 Je '64 (MIRA 18:4)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

TSVETKOV, V.N.; MITIN, Yu.V.; SHTENNIKOVA, I.N.; GLUSHENKOVA, V.R.; TARASOVA, G.V.; SKAZKA, V.S.; NIKITIN, N.A.

Sedimentation, diffusion, and viscosity of poly-γ-benzyl L-glutamate in solutions. Vysokom. soed. 7 no.6:1098-1103 Je '65. (MIRA 18:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

ISVETKOV, V.N.; SHTENNIKOVA, I.N.; RYUMTSEV, Ye.I.; OKHRIMENKO, G.I.

Flow birefringence and optical anisotropy of poly- γ'-benzyl L-glutamate molecules in solution. Vysokom. soed. 7 no.6:1104-1110 Je '65. (MIRA 18:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

TSVETKOV, V.N.; SHTENNIKOVA, I.N.; RYUMTSEV, Ye.I.; SKAZKA, V.S.

Birefringence in an electric field, rotatory diffusion, and dipole moments of poly-γ-benzyl glutamate molecules in solution. Vysokom. soed. 7 no.6:1111-1116 Je '65. (MIRA 18:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

ACC NR: AR6035046 SOURCE CODE: UR/0058/66/000/008/D091/D092

AUTHOR: Tsvetkov, V. N.; Shtennikova, I. N.

TITLE: Double refraction in a stream of a rigid chain molecule solution

SOURCE: Ref. zh. Fizika, Abs. 8D714

REF SOURCE: Sb. Optich. issled. molekulyarn. dvizheniye i mezhmolekulyarn. vzaimodeystv. v zhidkostyakh i rastvorakh. Tashkent, Nauka, 1965, 151-155

TOPIC TAGS: light refraction, double refraction, rigid molecular chain, rigid chain

ABSTRACT: A study was made of the dynamic birefringence of light by a number of cellulose ester solutions (nitro cellulose (I), ethylcellulose (II),and trinitrobenzoate cellulose (III)),whose molecular chains possess considerable skeletal rigidity. The study was made to determine the effect of the form of cellulose on the above parameter. The parameter [n], which is the dynamo-optical constant of the solution, varied parabolically with variation in the refractive index of the polymer in the case of I and III, which were characterized by positive and negative intrinsic anisotropy corresponding to the theoretical. The observed binary refraction for

Card 1/2

ACC NR: AR6035046

esters was found to exceed in magnitude by two orders this effect of elastic polymers. The second property found to be characteristic of these polymers solution was the independence of the above birefringence on the concentration of the solution in solvents, where the observed effect to a considerable degree is the effect of the form of the cellulose. It is assumed that the observed dynamo-optic effects of the ester forms of cellulose are a reflection of the segmented effects of the microfilm. A bibliography of 13 references is included. Ye. Glazunov. [Translation of abstract] [SP]

SUB CODE: 20/

Card 2/2

SVYATKOV, S.N.; SHTENNIKOVA, N.A.

Design of pneumatic transportation units with two evacuation fans. Der.prom. 9 no.3:12-13 Mr '60. (MIRA 13:6)

1. Lesotekhnicheskaya akademiya im. S.M.Kirova.
(Pneumatic-tube transportation)
(Wood-using industries--Equipment and supplies)

[redacted]; [redacted]; SITNIKOVA, N.A.; PUPYLEV, N.A.

Air [redacted] wood washes for the manufacture of particle boards.
Der. [redacted] 10-12 J. '61. (MIRA 14:2)

[redacted] Lesotekhnicheskaya akademiya im. S.M.Kirova.
(Hardboard)

LYANITSKIY, V.Ye., professor, doktor tekhnicheskikh nauk; SMORODINSKIY, N.A., dotsent; SHTENTSEL', V.K., dotsent; KAGAN, Ya.Kh., kandidat tekhnicheskikh nauk; KOMASHEV, D.G., inzhener; STREL'CHENI, M.M., inzhener.

[Harbor hydraulic-engineering installations] Portovye gidrotekhnicheskie sooruzheniia. Moskva, Izd-vo Ministerstva morskogo i rechnogo flota SSSR. Part 1. 1953. 624 p. (MLRA 6:12)
(Harbors) (Hydraulic engineering)

GORYUNOV, B.F., kandidat tekhnicheskikh nauk; GUDANETS, N.A., kandidat tekhnicheskikh nauk; ZLATOVERKHOVNIKOV, L.F., kandidat tekhnicheskikh nauk; KAGAN, Ya.Kh., kandidat tekhnicheskikh nauk; KRIVOV, A.K., inzhener; KUROCHKIN, S.N., inzhener; LYAKHNITSKIY, V.Ye., doktor tekhnicheskikh nauk, professor; NOVIKOV, A.F., kandidat tekhnicheskikh nauk; ROMASHOV, D.G., inzhener; SHTEYNTSEL', V.K., kandidat tekhnicheskikh nauk; KUZ'MIN, T.P., redaktor; ZAYTSEV, N.N., redaktor; NELIDOVA, E.S., redaktor izdatel'stva; TIKHONOVA, Ye.A., tekhnicheskiy redaktor

[Port hydrotechnical installations; construction and disign] Portovye gidrotekhnicheskie sooruzheniia; konstruirovanie i raschet. Moskva, Izd-vo "Morskoi transport," 1956. 537 p. (MLRA 9:11)
(Harbors)

LYAKHNITSKIY, Valerian Yevgen'yevich, zasluzhennyy deyatel' nauki i tekhniki, doktor tekhnicheskikh nauk, professor; SHTENTSEL', V.K., red.; VOLCHOK, K.M., tekhn.red.

[Harobrs] Porty. Leningrad, Izd-vo "Rechnoi transport," Leningr. otd-nie, 1957. 431 p. (MIRA 11:3)
(Harbors)

NIKIFOROV, Vasiliy Fedorovich, kand.tekhn.nauk; KAPELLO, I.A., red.; SHTENTSEL', V.K., retsenzent; ARKHIPOV, Ye.Ye., retsenzent; MAKRUSHINA, A.N., red. izd-va; BOBROVA, V.A., tekhn.red.

[Waterways and harbors] Vodnye puti i porty. Pt.3.[River ports] Rechnye porty. Moskva, Izd-vo "Rechnoi transport." 1958. 370 p. (MIRA 11:12)

(Harbors)

SHTENTSEL', V.K., kand.tekhn.nauk, dotsent; STEPANOV, I.A., inzh.

Accuracy of laboratory wave investigations. Trudy LIVT no.8:58-62 '60. (MIRA 15:2)

(Hydraulic engineering—Research)

S/194/62/000/006/043/232
D295/D308

AUTHOR: Shtentsel', V.K.

TITLE: Methods of measuring wave elements on space models

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-2-86 n (V sb. Novyye metody izmereniy i pribory dlya gidravlich. issled. M., AN SSSR, 1961, 22-24)

TEXT: Elements are described for modernizing a 24-loop OT-24 (OT-24) oscillograph to enable us to carry out the rapid calibration of all pick-ups recording wave heights in investigating the wave regime of an aquatorium by means of space models. The re-equipment consists in mounting (to avoid parallax errors) a special movable visor in the upper panel instead of a red glass, in mounting a special mirror scale behind the chart, and in the additional illumination of this scale by means of two small lamps which are only switched on in calibrating. The lack of coincidence of the loop-to-chart distance with the distance to the mirror scale will only make it necessary to introduce a constant correction coefficient to the

Card 1/2

NERPIN, Sergey Vladimirovich, doktor tekhn. nauk, prof.; KOTOV, Aleksandr Ivanovich; RASHA, Dmitriy Nikolayevich; ZARKHI, A.Z., kand. tekhn. nauk, dots., retsenzent; MORARESKUL, N.N., kand. tekhn. nauk, dots., retsenzent; SHTENTSEL', V.K., red.; VOLCHOK, K.M., tekhn. red.

[Footings, basements, and engineering geology] Osnovaniia, fundamenty i inzhenernaia geologiia. Pod obshchei red. S.V. Nerpina. Moskva, Izd-vo "Rechnoi transport," 1963. 360 p. (MIRA 16:7)

(Engineering geology)

ACC NR: AP6034014 SOURCE CODE: UR/0213/66/006/005/0900/0905

AUTHOR: Shtentsel', V. K.

ORG: none

TITLE: Specific character of the wave motion of a fluid and its considerations in the sea-wave theory

SOURCE: Okeanologiya, v. 6, no. 5, 1966, 900-905

TOPIC TAGS: hydrography, ~~wave theory, wave motion~~, hydrographic research, ocean current, ~~velocity, flow rate~~, fluid dynamics, motion mechanics, Ocean dynamics

ABSTRACT: In the present article, an attempt is made to show that the wave motion is of a specific type and differs from both turbulent and laminar motions. It is asserted that, as a rule, no deformation of particles is observed in laminar motion. In wave motion, the deformations are strictly periodic, and their frequencies are low. In turbulent motion, the deformations are random, and their frequencies are high. The equations of the fluid particle motion on a wave have been derived from the above-mentioned considerations. These equations give wave-current velocities one-half of the velocities obtained by Stokes, but corresponding to the values found by Shuliyicin. Orig. art. has: 4 figures and 8 formulas.

SUB CODE: 20,08/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001

Card 1/1 UDC: 532.59:551.466.31(26)

SHTEPA, A.

Those who look forward. Metallurg 7 no.4:35-36 Ap '62.
(MIRA 15:3)

1. Sekretar' partiynogo byuro elektrostaleplavil'nogo tsekha Kuznetskogo metallurgicheskogo kombinata.
(Novokuznetsk--Electrometallurgy)

SHTEPA, A.S.

133-58-4-9/40

AUTHORS: Konovalov, K. N., Korneva, N. K., Danilov, P. M., Teder, L. I., Drobyazko, T. T. and Shtepa, A.S., Engineers.

TITLE: Gaseous Heating of Ingot Heads (Gazovyy obogrev pribyl'noy chasti slitka)

PERIODICAL: Stal', 1958, Nr 4, pp 311-316 (USSR)

ABSTRACT: The use of an oxygen-coke-oven gas mixture for heating the hot tops of ingots weighing 5.6 to 6.7 tons developed on the Kuznetsk Works is described. The following optimal parameters for injector burner (Fig.1) were established: the diameter of the oxygen nozzle - 5 mm; the diameter of the mixing chamber - 16 to 18 mm; the diameter of the outlet 17 mm widening to 21 mm, the diameter of the tube for the gaseous mixture 1 1/2". Oxygen pressure 4-7 atm, coke oven gas pressure 200-350 mm H_2O. Consumption of gas 40-70 m^3/hr and of oxygen 15-30 m^3/hr. Experiments were carried out on 6-ton ingots of open hearth steel using the usual and experimental hot tops (of a smaller cross section but better insulated). Floating hot tops (Fig.2) were also tested. The duration of heating varied from 60 to 90 min, depending on the

Card 1/3 level of metal. The influence of gaseous heating on the

quality of steel was studied on transverse macro-templets cut out from the upper part of ingots after crop end (Fig.3). Chemical analysis indicated oxidation of aluminium, manganese and silicon (Fig.4). When bunkerite was added and carrying out heating under a protective layer of slag (by adding chamotte, furnace slag etc.) with a small addition of deoxidants, the oxidation of elements was stopped. The experimental results are shown in the Table. It was established that gaseous heating is possible, the quality of metal did not deteriorate and the yield of good semis increased by 5-7% due to a decrease in crop head from 17-18% to 10-11%. Similar experiments were carried out with stainless steel 1Kh18N9T. The results obtained indicated that the heating conditions (the ratio of the consumption of gas and oxygen and heating intensity) have a deciding influence on the oxidation of titanium and the quality of the macro-structure of steel. The following optimal conditions were established:

	Heating periods.		
	I	II	III
duration of heating period, min.	30-40	30-40	20-30
oxygen pressure, atm	6	5	4-3

Gaseous Heating of Ingot Heads 133-58-4-9/40

The pressure of coke oven gas should be increased to 2-3 atm (to avoid cooling of the burner). A maximum oxidation of titanium of 25% is observed when heating is carried out with an insufficient amount of protecting acid or fluid basic slag. The necessary amount of slag 5 to 7 kg should be added in 2-3 lots. By introducing into the slag titanium oxides and aluminium powder, the oxidation of titanium can be prevented. The quality of the metal obtained is satisfactory. Saving in metal due to a decrease in crop top - 6%. Further development of the process in order to decrease crop top to 6-8% should be carried out.
There are 1 table, 8 figures and 7 references, 6 of which are Soviet, 1 English.

ASSOCIATION: Kuznetskiy metallurgicheskiy kombinat
(Kuznetsk Metallurgical Combine)

1. Steel--Manufacture 2. Ingots--Heating 3. Slags--Properties

Card 3/3

SUBJECT: USSR/Flood Conduits

AUTHOR: Shtepa, B.G., Engineer, and Povlotskiy,M.Z., Engineer

TITLE: "Prefabricated, Prestressed Reinforced Concrete Flood Conduits" (Sbornyye livneprovody iz napryazhenno armirovannogo zhelezobetona).

PERIODICAL: "Gidrotekhnika i Melioratsiya", 1957, # 7, pp 24-28, (USSR)

ABSTRACT: Flood conduits across canals are built of reinforced concrete, and are generally either trough or tubular shaped. Preparation of designs for the building of prefabricated flood conduits will enable to mechanize and speed up installation, as well as effect considerable savings at construction costs. The aquaduct designed by the authors has a capacity of 2.5 cu m/sec, a cross section of 0.51 square meters, and a difference of levels between the upper and lower pools of 2.7 m. The structure consists of a total of 97 concrete blocks of 6 different types. The prestressed units are manufactured by means of hydraulic jacks of the type TsNIS MPS (ЦНИС МПС) with a capacity of 60 tons or the conventional hydraulic jack DG-100 (ДГ-100) with the special stressing attachment DORNII (ДОРНИИ).

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99-7-5/14

TITLE: "Prefabricated, Prestressed Reinforced Concrete Flood Conduits" Sbornyye livneprovody iz napryazhenno armirovannogo zhelezobetona).

Considerable savings in metal and cement can be made by using prestressed prefabricated reinforced parts.

The article contains 2 figures and 1 table, and lists 1 reference (Slavic).

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 2/2

SHTEPA, B.G., GONCHARENKO, P.A.

Creation of a wide area of raw products for the canning industry in the Volga-Akhtuba flood plain. Kons.i ov.prom. 15 no.11:25-27. (MIRA 13:10)
N '60.

1. Yuzhgiprovodhoz.
(Volga Valley—Canning industry)

SHTEPA, B.G. (Doctor-in-Engn)

Model of the Mississippi River basin. Gidr. i mel. 15 no.12:56-58
D '62 (MIRA 18:4)

SHTEPA, I.S.

Study of the pollens of Caucasus pine and fir trees. Soob.AN Gruz. SSR 15 no.3:175-182 '54. (MIRA 8:5)

1. Predstavleno deystvitel'nym chlenom Akademii nauk V.Z.Gulisashvili.
(Caucasus--Pollen)

SHTEPA, I.S.

Pollen morphology in some genera of the tribe Cynareae of the composite family. Zam. po sist. i geog. rast. no.20:54-62 '58.
(MIRA 12:9)

(Pollen--Morphology) (Cynareae)

SHTEPA, I. S.

Method of studying herbarial pollen of hybrid plants. Zam. po sist. i geog. rast. no.21:67-70 '59. (MIRA 13:8)
(Palynology)

SHTEPA, I.S.

Morphology of pollen of the genus Cirsium Mill. and allied genera of the tribe Cynareae (Compositae). Trudy Tbil.bot.inst. 21:81-126 '61. (MIRA 14:10)

(Thistle) (Pollen--Morphology)

SHTEPA, I.S.

"Palynological details concerning the Caucasian representatives of Causinai Cass."

Report to be submitted to the Intl. Conf. on Palynology, Tucson, Arizona 23-27 Apr 1962.

Botanical Inst., AS Georgian SSR, Tbilisi

SMITH, I.S.

Pollen of hybrid plants of the Canadian species of the genus Cirsium Mill. Vam. po sist. i geog. rast. no.23:117-121 '63. (MIRA 17:12)

SHTEPA, M.M.

Excursion to a steam electric power plant. Geog. v shkole 25 no.1:49-51 Ja-F '62. (MIRA 15:1)
(School excursions)
(Electric power plants)

SHTEPA, N.I.

Physics

209

ERRORS OF THIRD ORDER IN CYLINDRICAL ELECTRON LENSES. N. I. Shtepa. Zhur. Tekh. Fiz. 22, 216-26(1952) Feb. (In Russian)

The author uses the method of trajectories (cf. O. Scherzer, Beitr. Elektronenoptik 33(1947); R. Hutter, J. Applied Phys. 18, 740(1947)) to find errors of third order due to distortion, spherical aberration, curvature of field, initial velocities of electrons, etc., in cylindrical electron lenses. (G.Y.)

SHTEP', N. I.

USSR/Electronics - Electron Optics Feb 52

"Errors of Third Order in Cylindrical Electron Lenses," N. I. Shtep

"Zhur Tekh Fiz" Vol XXII, No 2, pp 227-237

Subject although important is little analyzed. Shtep uses method of trajectories (cf. O. Scherzer, "Beitrage zur Elektronenoptik" 33, 1947; R. Hutter, J. of Appl. Phys., 18,740 1947) to find errors of 3d order, due to distortion, spherical aberration, curvature of field, initial velocities of electrons, etc. Indebted to A. M. Strashkevich. Received 28 May 51.

209T58

ŠTEPA, N.I.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1559
AUTHOR ŠTEPA,N.I.
TITLE The Graphoanalytical Construction of the Spatial Orbits of Charged Particles in Electrostatic Fields by the Method of the Radii of Curvature.
PERIODICAL Žurn.techn.fis, 26, fasc.10, 2281-2286 (1956)
Issued: 11 / 1956

The here described construction is suited for relativistic and nonrelativistic particles in electrostatic fields. At first the equations of motion of a relativistically charged particle in the rectangular system of coordinates and explicit expressions for the radii of curvature of the orbits of the particles are written down and transformed. The transformed relations for the radii of curvature are (if supplemented by the method of velocities) suited for the graphically analytical construction of spatial orbits in an assumed electrostatic field. However, in many cases it is more convenient to use the energy theorem. The velocity components are determined by the method of successive velocity increase. The corresponding expressions are explicitly given and permit the determination of the velocity of the particles at any point of the orbit if the initial velocities of the particle and the distribution of the field are known. Next, the construction of the spatial orbit by the method of radii of curvature is described in detail. If the field is determined experimentally (as e.g. by the method of the electrolytic trough), it is not necessary to determine the equipotential image of the entire image and it will be sufficient to de-

AUTHOR: SHTEPA, N.I.

TITLE: The Construction of Spaoe Trajectories of Charged Particles in Electrostatic Fields by the Method of the Radii of Curvature. (Postroyeniye prostranstvennykh trayektoriy zaryazhennykh chastits v elektrostaticheskikh polyakh metodom radiusov krivizny, Russian)

109-5-15/22

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol 2, Nr 5, pp 637-641 (U.S.S.R.)

ABSTRACT: A construction without the application of the method of velocity increase is described here. The here suggested method of an approximated graphic-analytical construction of spatial trajectories offers the possibility of constructing trajectories of charged relativistic and also of not relativistic particles provided the field distribution is known or can be determined in the course of construction. The method can be successfully applied in practice. In conclusion an example of such a trajectory construction is given. (With 1 Table, 1 Illustration, and 5 Slavic References).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 14.7.1956
AVAILABLE: Library of Congress

Card 1/1

109-6-12/17

AUTHOR SHTEPA, M.I.

TITLE Grafoanalytic Plotting of the Paths of Charged Particles in Magnetic Fields.
(Grafoanaliticheskiye postroyeniya trayektoriy zaryazhennykh chastits v magnitnykh polyakh - Russian)

PERIODICAL Radiotekhnika i Elektronika, 1957, Vol 2, Nr 6, pp 790-795 (U.S.S.R.)

ABSTRACT Two methods are given for the plotting of space trajectories of charged relative particles in magnetic fields on the condition that the field distribution is known. The author used these methods already in the plotting of trajectories of charged particles in electrostatic fields. (ZhTF, 1956, 26, 1241 and RE, 1957, 2, 697-704) The first method is that of space increase. Here the path is plotted by projection on the XOY and XOZ coordinate planes. In the second method, that of curvature radii, the path is again plotted by projection to the coordinate planes XOY and XOZ, but with the difference that now the projections are plotted from the subsequent tangential arcs of the circle. The accuracy of plotting in both cases depends on the errors of the method itself and those occurring in the graphical and analytical representations. The latter can always be reduced by larger proportion and increase the precision of calculation. The errors connected with the method are, however, the fewer the smaller are the regions from which the path is plotted. Finally a path of an electron moving in a homogeneous magnetic field is given. The results obtained show that the trajectories plotted according to these methods are sufficiently close to

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SHTEPA, N. I.

AUTHOR: Shtepa, N. I. 57-1-25/30

TITLE: Grapho-Analytical Plotting of Charged Particle Trajectories in Variable Electric and Constant Magnetic Fields (Grafoanaliticheskiye postroyeniya trayektoriy zaryazhennykh chastits v peremennykh elektricheskikh i postoyannykh magnitnykh polyakh).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 1, pp. 178-187 (USSR)

ABSTRACT: In this work the graphoanalytical plotting of the charged particles in variable electric fields, in superimposed variable electric fields and in constant magnetic field according to the method of the increase of the velocity and the method of the radii of curvatures is given with the following neglections: 1) Influence of the magnetic component of the variable electric field on the motion of the charged particles. 2) Energy of the electromagnetic radiation of the moving particles, and 3) action of the spatial charge of moving particles. The field potential distribution is assumed as known, i. e. as a function of the coordinates and of time or as numerical values at the points necessary for the plotting at the necessary time. In the case of a presence of a constant magnetic field the potential of the magnetic field is assumed as known. Both methods are an elaboration of the similar methods (ref. 4, 8, 9) suggested for the plotting of trajectories of char-

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Grapho-Analytical Plotting of Charged Particle Trajectories in Variable Electric and Constant Magnetic Fields. 57-1-25/30

ged particles in static fields in the case of variable electric fields. The shortcomings of these method are shown as well as the possibilities for their corrections. The range for the application of these methods which is delimited by the above 3 shortcomings is briefly discussed. Conclusively an example for the plotting is given. It is stated that the suggested grapho-analytical methods can be used successfully for the plotting of trajectories of nonrelativistic and relativistic charged particles in variable electric fields and in superimposed constant magnetic fields for the case that during the plotting the field distribution along the trajectories can be found or is already known. There are 3 figures, and 9 references, 8 of which are Slavic.

SUBMITTED: March 19, 1957

AVAILABLE: Library of Congress

Card 2/2

SHTEPA, N.I.

Graphic -analytic plotting of charged particle trajectaries in electrostatic and magnetic fields. Zhur. tekh. fiz. 28 no.11: 2587-2603 N '58. (MIRA 12:1)
(Particles, Elementary)

AUTHOR: Shtepa, N.I. SOV/109-4-4-16/24

TITLE: Graphico-analytical Construction of the Trajectories of Charged Particles in Axially Symmetrical Electric and Magnetic Fields (Grafoanaliticheskiye postroyeniya trayektoriy zaryazhennykh chastits v aksial'no-simmetrichnykh elektricheskikh i magnitnykh polyakh)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 4, pp 695 - 702 (USSR)

ABSTRACT: The work is a continuation of the investigations described by the author in his earlier papers (Refs 1-4). It is assumed that the field distribution is known and that the space charges of the moving particles and their radiation can be neglected. A cylindrical system of co-ordinates (r, ϑ, z) is employed. The motion of a charged relativistic particle in an axially symmetrical field is described by Eqs (2), where E_r and E_z are the external electric field components, E_ϑ is the induced electric field, while H_r and H_z are the magnetic field components. First, the velocity-increment method of the

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Graphico-analytical Construction of the Trajectories of Charged Particles in Axially Symmetrical Electric and Magnetic Fields

trajectory construction is considered. For this purpose, the derivatives of Eqs (2) are expressed by finite differences; consequently, the equations can be written in the form of Eqs (3). The construction of the trajectories will be more accurate, however, if Eqs (3) are written in the form of Eqs (4). In this case, the approximating rectilinear segments are drawn at an angle which is a mean of the angles of the tangents at the start and the end of each of the construction segments. The method is illustrated in Figure 1. The second method is based on the use of the radii of curvature. The basic formulae for this case are given by Eqs (5), where the derivatives of r, ϑ and z can be found on the basis of the energy conservation law. The velocity-increment of a particle is defined by Eq (7). Consequently, the derivatives of r, ϑ and z are defined by Eqs (8). Eqs (5), together with Eqs (8) are the principal formulae for the construction of the trajectories. The methods are employed

Graphico-analytical Construction of the Trajectories of Charged Particles in Axially Symmetrical Electric and Magnetic Fields

to construct the first turn of the electron trajectory in a betatron. The results are shown in Figures 3 and 4 and in Table 1. The figures illustrate the dependence of z on ϑ and r on ϑ for ϑ ranging from 0 - 400°. From the figures and the table it is seen that the results obtained by the two methods are in good agreement. There are 4 figures, 2 tables and 6 Soviet references.

SUBMITTED: November 4, 1957

Card3/3

SHTEPA, N.I.

Finding the trajectories of relativistic charged particles in electric and magnetic fields by the Adams method of finite differences. Zhur.tekh.fiz. 29 no.1:120-127 Ja '59. (MIRA 12:4)
(Particles, Elementary) (Electric fields)
(Magnetic fields)

6.7000,16.8300

77338
SOV/57-30-1-17/18

AUTHOR: Shtepa, N. I.

TITLE: Numerical Evaluation of Trajectories of Charged Relativistic Particles in Electric and Magnetic Fields

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 1, pp 121-124 (USSR)

ABSTRACT: Method of solving differential equations of the first order that the author used (ZhTF, XXIX, 120, 1959) in solving the same problem is cumbersome to compute, and it reduces the accuracy of the solution as shown by Kollatts (Chislennyye metody resheniya differentsial'nykh uravneniy, M., 1953). This time the author sticks to one of the interpolation methods applying them to the equation of motion of charged relativistic particles in constant electric and magnetic fields of arbitrary shape. Electrical variables may be of an arbitrary form while the magnetic ones are axially symmetric. Equation is written in the form

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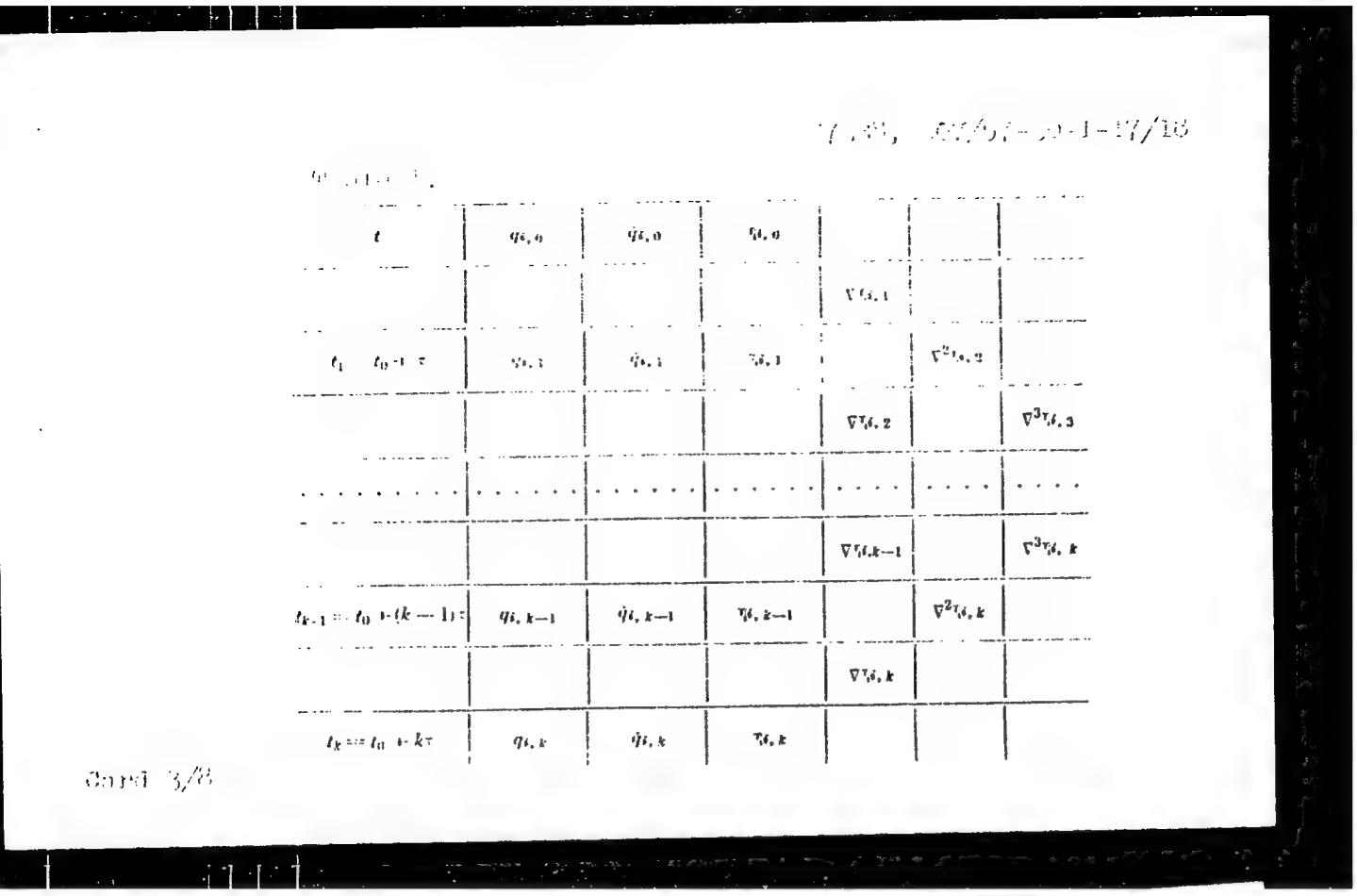
$$\ddot{q}_i = f_i(q_1, q_2, q_3, \dot{q}_1, \dot{q}_2, \dot{q}_3, t), \quad i = 1, 2, 3, \qquad (1)$$

where q_1, q_2, q_3 are denoted rectangular x, y, z coordinates or r, φ, z cylindrical ones. $\dot{q}_i$ - corresponding time derivatives. Initial conditions are

$$q_i(t_0) = q_{i,0},\ \dot{q}_i(t_0) = \dot{q}_{i,0}\ (i = 1, 2, 3).$$

Solution of (1) is obtained constructing three tables of the type of Table 1.



t	$q_{i,0}$	$\dot{q}_{i,0}$	$\gamma_{i,0}$			
				$\nabla\gamma_{i,1}$		
$t_1 = t_0 + \tau$	$q_{i,1}$	$\dot{q}_{i,1}$	$\gamma_{i,1}$		$\nabla^2\gamma_{i,2}$	
				$\nabla\gamma_{i,2}$		$\nabla^3\gamma_{i,3}$
. . . . .	. . . . .	. . . . .	. . . . .	. . . .	. . . .	. . . .
				$\nabla\gamma_{i,k-1}$		$\nabla^3\gamma_{i,k}$
$t_{k-1} = t_0 + (k-1)\tau$	$q_{i,k-1}$	$\dot{q}_{i,k-1}$	$\gamma_{i,k-1}$		$\nabla^2\gamma_{i,k}$	
				$\nabla\gamma_{i,k}$		
$t_k = t_0 + k\tau$	$q_{i,k}$	$\dot{q}_{i,k}$	$\gamma_{i,k}$			

Numerical Solution of Trajectories of Charged Relativistic Particles in Electric and Magnetic Fields

where

$$\eta_{i,k} = \tau f_i(q_{1,k}, q_{2,k}, \ldots \dot{q}_{3,k}, t_k) \quad (q_{i,k} = q_i(t_k)),$$
$$\nabla\eta_{i,k} = \eta_{i,k} - \eta_{i,k-1}, \quad \nabla^2\eta_{i,k} = \nabla\eta_{i,k} - \nabla\eta_{i,k-1}, \ldots$$

Quantities entering the tables are computed using Falkner extrapolation formulas

$$\left.\begin{aligned} q_{i,k+1} &= q_{i,k} + \tau\dot{q}_{i,k} + \tau\sum_{r=0}^{p} a_r\nabla^2\eta_{i,k}, \\ \dot{q}_{i,k+1} &= \dot{q}_{i,k} + \sum_{r=0}^{p} b_r\nabla^r\eta_{i,k} \quad (\nabla^0\eta_{i,k} = \eta_{i,k}), \end{aligned}\right\} \qquad (2)$$

where

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$$a_r = \int_0^1 \int_0^\infty \frac{u(u+1)(u+2)\ldots(u+r-1)}{r!} du dr,$$

$$b_r = \int_0^1 \frac{u(u+1)(u+2)\ldots(u+r-1)}{r!} du.$$

First values of the coefficient a_r, b_r are shown in Table 2.

Table 2.

r	0	1	2	3	4	5
a_r	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{19}{180}$	$\frac{3}{32}$	$\frac{863}{10080}$
b_r	1	$\frac{1}{2}$	$\frac{5}{12}$	$\frac{3}{8}$	$\frac{251}{720}$	$\frac{95}{288}$

Values of $q_{i,1}$; $\dot{q}_{i,1}$; $q_{i,2}$; $\dot{q}_{i,2}$, etc. at the initial segment of the trajectory may be obtained by means of Taylor series, iteration methods, etc. In a coarse approximation

1. $\tilde{q}_{i,1} = q_{i,0} + \tau\dot{q}_{i,0} + \frac{1}{2}\tau\eta_{i,0}$, $\tilde{\dot{q}}_{i,1} = \dot{q}_{i,0} + \eta_{i,0}$ $(i = 1, 2, 3)$,

yield $\tilde{\eta}_{i,1} = \tau f_i(\tilde{q}_{1,1}, \tilde{q}_{2,1}, \ldots \tilde{q}_{3,1}, t_1)$, $\nabla\tilde{\eta}_{i,1} = \tilde{\eta}_{i,1} - \eta_{i,0}$.

2. $q^{[0]}_{i,1} = q_{i,0} + \tau\dot{q}_{i,0} + \frac{\tau}{2}\left(\eta_{i,1} + \frac{1}{3}\nabla\tilde{\eta}_{i,1}\right)$, $\dot{q}^{[0]}_{i,1} = \dot{q}_{i,0} + \eta_{i,0} + \frac{1}{2}\nabla\tilde{\eta}_{i,1}$,

yield

$$\eta^{[0]}_{i,1} = \tau f_i(q^{[0]}_{1,1}, q^{[0]}_{2,1}, \ldots \dot{q}^{[0]}_{3,1}, t_1), \quad \nabla\eta^{[0]}_{i,1} = \eta^{[0]}_{i,1} - \eta_{i,0}.$$

3. $q^{[0]}_{i,2} = 2q^{[0]}_{i,1} - q_{i,0} + \tau\eta^{[0]}_{i,1}$, $\dot{q}^{[0]}_{i,2} = \dot{q}_{i,0} + 2\eta^{[0]}_{i,1}$,

yield

$$\eta^{[0]}_{i,2} = \tau f_i(q^{[0]}_{1,2}, q^{[0]}_{2,2}, \ldots \dot{q}^{[0]}_{3,2}, t_2), \quad \nabla\eta^{[0]}_{i,2} = \eta^{[0]}_{i,2} - \eta^{[0]}_{i,1}, \quad \nabla^2\eta^{[0]}_{i,2} = \nabla\eta^{[0]}_{i,2} - \nabla\eta^{[0]}_{i,1}$$

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4. $q^{[0]}_{i,3} = 2q^{[0]}_{i,2} - q^{[0]}_{i,1} + \tau\left(\eta^{[0]}_{i,2} + \frac{1}{12}\nabla^2\eta^{[0]}_{i,2}\right)$, $\dot{q}^{[0]}_{i,3} = \dot{q}^{[0]}_{i,1} + 2\eta^{[0]}_{i,2} + \frac{1}{3}\nabla^2\eta^{[0]}_{i,2}$.

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The approximation is then improved by ν -fold iteration. Numerical values of the solution are obtained by filling out the tables of differences. The author supplies a recurrent equation for estimating the accuracy of the solution but points out that the result of estimating the accuracy is of a much higher order of magnitude than the actual error. In practice one can take the construction accuracy of difference tables for the accuracy of shorter segments of the trajectory. The author evaluated the trajectory of a 1 mev electron moving in an electric field $E = E_x = -2 \cdot 10^4$ v/cm and magnetic field $H = H_x = 200$ Oerst. Initial velocities $\dot{x}_0 = \dot{z}_0$; $\dot{y}_0 = 0$. The step used was $\tau = 10^{-11}$ sec, and computations were made up to six significant figures. It was sufficient to go to the third order differences tables and the trajectory agreed in all six significant figures with the actual one, in the x interval from 0 to 14 cm. There are 2

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Numerical Evaluation of Trajectories of Charged Relativistic Particles in Electric and Magnetic Fields

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tables; and 2 Soviet references.

ASSOCIATION: Orsk State Pedagogy Institute (Orskiy gosudarstvennyy pedagogicheskiy institut)

SUBMITTED: July 28, 1958

Card 8/8

SHTEPA, N.I.

Compensation-zero method for investigating plane and axisymmetrical magnetic fields. Prib. i tekh.eksp. 6 no.4:79-83 Jl-Ag '61. (MIRA 14:9)

1. Orskiy gosudarstvennyy pedagogicheskiy institut.
(Magnetic fields--Measurement)

S/044/63/000/002/029/050
A060/A126

AUTHOR: Shtepa, N.I.

TITLE: Numerical solution of a system of ordinary differential equations of a high order

PERIODICAL: Referativnyy zhurnal, Matematika, no. 2, 1963, 3, abstract 2V4 (Uch. zap. Orskiy gos. ped. in-t, 1962, no. 3, 5 - 10)

TEXT: The author considers the numerical solution of a system of ordinary differential equations

$$\frac{d^{n_i} q_i}{dx^{n_i}} = f_i(x, q_1, q_1' \ldots q_1^{(n_1-1)}, \ldots, q_r, q_r' \ldots q_r^{(n_r-1)}) \quad (1)$$

with the initial conditions

$$q_i^{(\nu)}(x_0) = q_{i0}^{(\nu)}, \quad \nu = 0, 1, \ldots, n_i - 1.$$

The author indicates that the numerical solution of that system may be obtained, if that system is reduced to a system of first-order differential equations. However, as result of an n-fold replacement of functions by polynomials in pow-

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Numerical solution of a system of ordinary ....

ers of increments of x the precision is decreased and the volume of computational labor increases sharply. Consequently, the author proposes to apply numerical methods directly to the system (1). Further, an extrapolation method is proposed for the solution of differential equations of a high order. The author assumes that the solution exists in some domain of the space $x, q_1, \ldots, q_1^{(n-1)} \ldots q_r \ldots q_r^{(n-1)}$, containing also all of its approximations. Let f_i satisfy the Lipschitz condition

$$|f_i(x, q_1 \ldots q_r^{(n-1)}) - f_i(x, q^* \ldots q_r^{*(n-1)})| < \sum_{\nu=1}^{r} \sum_{\mu=0}^{n-1} K_{i,\nu,\mu} |q_\nu^{(\mu)} - q_\nu^{*(\mu)}|.$$

Falkner's extrapolation formula is applied to f_i. Then the approximate values of the solutions $q_{i,l+1}^{(m)}$ (for $x = x_{l+1} = x_0 + (l+1)h$, $l = 0, 1, 2, \ldots$) are equal to

$$q_{i,l+1} = \sum_{\nu=0}^{n-m-1} \frac{h^\nu}{\nu!} q_{i,l}^{(m+\nu)} + h^{n-m} \sum_{\varrho=0}^{\varrho} \beta_{n-m,\varrho} \nabla^\varrho f_{i,l} \qquad (2)$$

with a remainder term

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Numerical solution of a system of ordinary ....

$$|R_{i,n-m,p+1}(x_{i+1})| < \beta_{n-m,p+1} h^{p+n-m+1} |f_i^{(p+1)}|_{max}$$

where

$$\nabla^0 f_{i,l} = f_{i,l}, \quad \nabla^\rho f_{i,l} = \sum_{\sigma=0}^{\rho} (-1)^\sigma \binom{\rho}{\sigma} f_{i,l-\sigma},$$

$$f_{i,k} = f_i(x_k, q_{1k}, \ldots, q_{nk}^{(n-1)}),$$

$$\beta_{n,\rho} = \underbrace{\int\int\ldots\int}_{n} \frac{u(u+1)(u+2)\ldots(u+\rho-1)}{\rho!} du,$$

where p is the highest order of the retained difference. The error of the solution is equal to

$$\varepsilon_{i,l+1}^{(m)} = q_{i,l+1}^{(m)} - q_i^{(m)}(x_{l+1}).$$

$q_{i,l+1}^{(m)}$ may be calculated from formula (2). However, that estimate of the error is very approximate. In practice, for estimating, the error calculations at different steps are carried out; their discrepancy characterizes the precision of the solution. As an illustration, an example is given of a numerical calcu-

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S/044/63/000/002/029/050
A060/A126

Numerical solution of a system of ordinary ...

lation of finding the trajectory of an electron moving in a superimposed electrostatic and electromagnetic homogeneous field. The results of the calculations are reduced to a table.

P.P. Vasil'yev

[Abstracter's note: Complete translation]

Card 4/4

L 41706-65 EWT(1) IJP(c)

ACCESSION NR: AR5008419 UR/0058/65/000/001/E092/E092

15
B

SOURCE: Ref. zh. Fizika, Abs. 1E728

AUTHOR: Shtepa, N. I.

21

TITLE: Determination of the spatial distribution of magnetic fields by a null-compensation method

CITED SOURCE: Uch. zap. Orskiy gos. ped. in-t, vyp. 5, 1963, 50-54

TOPIC TAGS: magnetic field, field distribution, measurement method, field plotting

9m

TRANSLATION: A previously proposed null-compensation method for determining the distribution of plane and axially-symmetrical magnetic fields (RZhFiz, 1962, 4E598) has been used to determine the spatial distribution of magnetic fields of arbitrary configurations. To this end, using a previously described and only slightly modified installation, the author plots successively the lines of equal intensity components in neighboring parallel planes. The sensitivity of the installation is 0.1 Oe, and the accuracy is 2%. By way of an example, the distribu-

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L 41706-65

ACCESSION NR: AR5008419

tion of the lines H_x = const; H_y = const, and H_z = const is shown in the plane Z = R/2 for a magnetic field produced by a circular current with turn radius R = 10 cm. N. Potapov.

ENCL: 00

SUB CODE: EM

am

Card 2/2

L 10167-63 EWT(1)/EDS/ES(w)-2--AFFTC/ASD/
ESD-3/SSD--Pab-4--IJP(C)
ACCESSION NR: AP3000004 S/0057/63/033/005/0522/0529

62
61

AUTHOR: Shtepa, N. I.

TITLE: Concerning the corpuscular-optical properties of axially symmetric static systems with a rotating magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 522-529

TOPIC TAGS: particle optics, rotating field lenses, magnetic-electrostatic lenses

ABSTRACT: While most present-day systems for focusing charged particles[21] consist of stationary electrostatic and magnetic lenses, preliminary analysis shows that use of moving lenses, specifically, a rotating magnetic field, has promising potentialities. Hence the author considers the corpuscular-optical properties of combined axially symmetric systems with the magnetic field rotating about the symmetry axis. Equations for the motion of charged non-relativistic particles and paraxial trajectories are adduced. Compensation of space charge in the axial region is considered; chromatic and third order

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L 10167-63
ACCESSION NR: AP3000004

aberrations are evaluated. It is shown that combined systems may act as collecting or dispersing systems, depending on the rate of rotation of the magnetic field. Use of a rotating magnetic lens can help minimize and correct chromatic and third order aberrations. It is suggested that systems of the considered type may prove valuable in working with ion beams. Orig. art. has: 50 equations.

ASSOCIATION: Orskiy pedagogicheskiy institut (Orsk Pedagogical Institute)

SUBMITTED: 20Mar62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH,SD NR REF SOV: 000 OTHER: 003

Card 2/2

SHTEPA, N.I.

Finding the spatial distribution of magnetic fields by the compensatory null method. Uch. zap. Orsk. gos. ped. inst. no.5:50-54 '63. (MIRA 18:3)

L 9924-63 EWT(1)/BDS--AFFTC/ASD
ACCESSION NR: AP3000023 S/0057/63/033/005/0639/0640

51
50

AUTHOR: Shtepa, N. I.

TITLE: Condition under which a relativistic charged particle cannot reach the axis in axially-symmetric static fields (Letter to the editor)

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 5, 1963, 639-640

TOPIC TAGS: relativistic particles, axially-symmetric fields

ABSTRACT: From the equation for the trajectory of a relativistic particle moving in static electric and magnetic fields in vacuuo, obtained by intergration of the equation of motion for a non-relativistic particle with the actual electric field potential replaced by a ficticious potential, there is deduced an inequality expression for the trajectory of a relativistic particle in cylindrical coordinates. This inequality is the condition under which a relativistic charged particle will be unable to reach the symmetry axis in constant axially-symmetric fields. Orig. art. has: 8 equations.

Card 1/2 Orsk Pedagogical Inst.

SHTEPA, N.I.

Condition under which a relativistic charged particle will not reach the axis in axisymmetrical static fields. Zhur.tekh.fiz. 33 no.5:639-640 My '63. (MIRA 16:6)

1. Orskiy pedagogicheskiy institut.
(Dynamics of a particle)

ACCESSION NR: AP4017597 S/0109/64/009/002/0272/0282

AUTHOR: Shtepa, N. I.

TITLE: Radial-focusing characteristics of static transaxial fields

SOURCE: Radiotekhnika i elektronika, v. 9, no. 2, 1964, 272-282

TOPIC TAGS: transaxial field, transaxial electric field, transaxial magnetic field, transaxial field characteristics, transaxial field radial focusing, transaxial lens, transaxial lens power

ABSTRACT: A theoretical investigation of axially-symmetric radial-focusing corpuscular-optical systems which form the so-called "disk beam" of charged particles is presented. Transaxial combined (magnetic and electric) fields are studied. It is assumed that (a) the paths of the charged particles are close to the plane of symmetry of the fields, i.e., to the plane of shaping the disk beam, and (b) the effect of the space charge can be neglected. Expansions describing the

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ACCESSION NR: AP4017597

magnetic-flux-density components in transaxial fields are derived. It is shown that the disk beam can be formed not only by an electric field but also by the magnetic and combined transaxial fields. It is proven that radial-focusing fields have only a collecting characteristic. Formulas are developed for the power of short and weak transaxial lenses. The results of studies of the radial focusing of nonrelativistic particles are extended over to relativistic particles. The principal errors of radial focusing are considered: azimuth scatter aberration, chromatic aberration, and third-order errors. Orig. art. has: 2 figures and 60 formulas.

ASSOCIATION: none

SUBMITTED: 14Jan63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: GE NO REF SOV: 004 OTHER: 000

Card 2/2

SHTEPA, P. S.

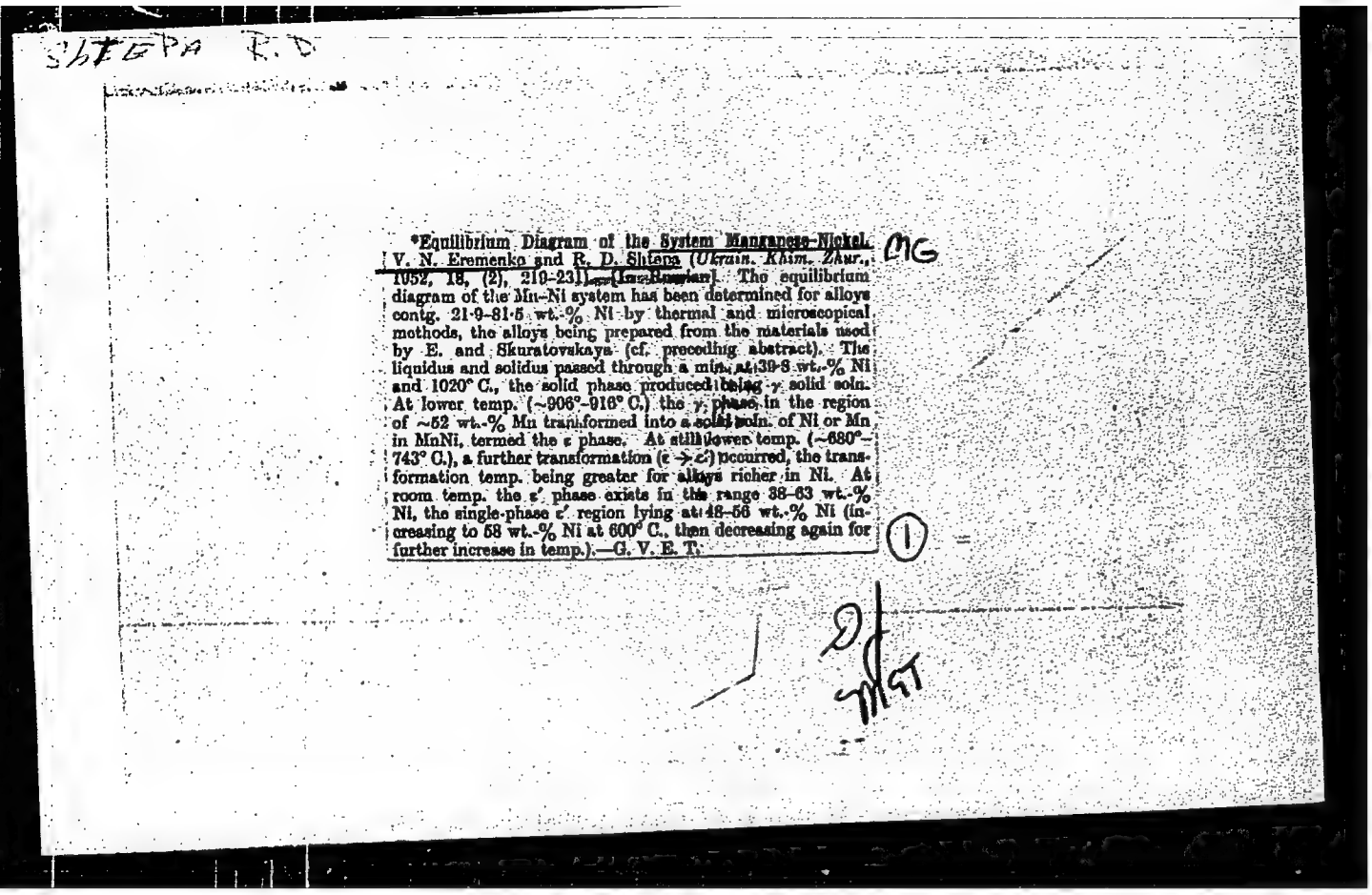
"High-Frequency Oscillations of Star Type Systems." Cand Tech Sci, Moscow Higher Technical School, Moscow 1954. (RZhFiz, Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

SHTEPA, P.S., kand.tekhn.nauk

Methods of studying and calculating the vibrations of locomotives. (MIRA 15:3)
Sbor.trud.BITM no.20:43-54 '61.
(Locomotives--Vibrations)



ШТЕРА Р. Д.

*Equilibrium Diagram of the System Manganese-Nickel. V. N. Eremenko and R. D. Shtepa (*Ukrain. Khim. Zhur.*, 1952, 18, (2), 219–231).—(In Russian.) The equilibrium diagram of the Mn–Ni system has been determined for alloys contg. 21·9–81·5 wt.-% Ni by thermal and microscopical methods, the alloys being prepared from the materials used by E. and Skuratovskaya (cf. preceding abstract). The liquidus and solidus passed through a min. at 39·8 wt.-% Ni and 1020° C., the solid phase produced being γ solid soln. At lower temp. (~906°–916° C.) the γ phase in the region of ~52 wt.-% Mn transformed into a solid soln. of Ni or Mn in MnNi, termed the ε phase. At still lower temp. (~680°–743° C.), a further transformation (ε → ε′) occurred, the transformation temp. being greater for alloys richer in Ni. At room temp. the ε′ phase exists in the range 38–63 wt.-% Ni, the single-phase ε′ region lying at 48–56 wt.-% Ni (increasing to 58 wt.-% Ni at 600° C., then decreasing again for further increase in temp.).—G. V. E. T.

MG

(1)

MON'KO, O.; SHTEPA, S.

"Collected regulations and instructions on safety measures in enterprises producing building materials" by I.Babichinskii and others. Reviewed by O.Mon'ko, S.Shtepa. Bez.truda v prom. 6 no.1:38 Ja '62. (MIRA 15:1)

1. Gornotekhnicheskiye inspektora Vinnitskoy rayonnoy gornotekhnicheskoy inspektsii Upravleniya Kiyevskogo okruga Gosgortekhnadzora USSR.

(Building materials industry)

SHTEPA, S.I., inzh.lesnogo khozyaystva (g. Vinnitsa)

New machinery for the care and maintenance of plantations. Put' i put.khoz. 6 no.5:32-33 '62. (MIRA 15:4)
(Railroads--Equipment and supplies)
(Windbreaks, shelterbelts, etc.)

ШТЕРА, Т. Д.

4

(2)

Journal of Applied Chemistry

Equilibrium diagram of the manganese-nickel system. V. N. Eremenko and T. D. Shtepa. (*Ukr. Khim. Zhur.*, 1952, 18, 219—231). —A diagram covering the range 21·0—81·5% of Ni is presented, based on thermal analysis, dilatometry, and micrography of cast and heat-treated alloys. R. C. Murray.

Kiev State U

ACCESSION NR: AP4040771 S/0021/64/000/006/0763/0766

AUTHOR: Yeremenko, V. N.; Shtepa, T. D.; Churakov, M. M.

TITLE: Interaction of titanium with iridium

SOURCE: AN UkrRSR. Dopovidi, no. 6, 1964, 763-766

TOPIC TAGS: titanium-iridium system, titanium iridium alloy, alloy property, alloy structure, titanium indium compound

ABSTRACT: Methods of metallography, x-ray diffraction, and microhardness tests were used to investigate titanium-iridium alloys containing 1--55 at% iridium. Alloys were melted in an unconsumable electrode arc furnace in an argon atmosphere, then annealed at 1100C for 48 hr in evacuated quartz ampoules and furnace cooled. Three intermediate phases were found in the system. The phase appearing in the alloy with 15 at% iridium was designated the γ-phase; the alloy with 25 at% iridium consists of γ-phase only. According to the composition and structure, it is the Ti_3Ir compound; its microhardness is 780--850 kg/mm^2; Alloys with high γ-phase content are

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ACCESSION NR: AP4040771

brittle and break down during machining or sharp temperature changes. In the alloy with 33 at% iridium another phase, the δ'-phase, is formed. The alloy with 40% iridium consists of the δ'-phase alone, the microhardness of which is nearly 700 kg/mm^2. This phase is based apparently on the TiIr compound and is a high temperature modification of the δ-phase. The Y-phase has a Cr_3O-type cubic structure with a lattice constant of 5.00 kX; the δ'-phase has a CsCe-type structure with a lattice constant of 3.10 kX; the structure of the δ-phase could not be determined. Orig. art. has: 3 figures.

ASSOCIATION: Insty*tut metalokeramiki ta spetssplaviv AN URSR (Institute of Powder Metallurgy and Special Alloys, AN URSR)

SUBMITTED: 17Jun63 ATD PRESS: 3049 ENCL: 00

SUB CODE: MM, ML NO REF SOV: 000 OTHER: 002

Card 2/2

ACCESSION NR: AP4040758 S/0073/64/030/006/0649/0651

AUTHOR: Shtepa, T. D.; Gritsenko, E. G.

TITLE: Effect of rhodium on the dissolution rate of titanium in acids

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 6, 1964, 649-651

TOPIC TAGS: titanium, rhodium, titanium rhodium alloy, titanium corrosion resistance, alloy corrosion resistance, titanium dissolution, alloy dissolution, dissolution rate, alloy corrosion, alloy corrosion rate

ABSTRACT: The investigation of the effect of alloying with 1—10 at% rhodium on the corrosion resistance of titanium in various acids demonstrated that rhodium improves the resistance of titanium in sulfuric acid, has no effect on its corrosion resistance in diluted hydrochloric acid, but decreases its resistance in concentrated hydrochloric acid. The dissolution rate of unalloyed titanium in concentrated hydrochloric acid is 0.007 mg/cm^2·hr, while titanium alloy with 10 at% Rd dissolves at a rate of 0.026 mg/cm^2·hr. The resistance of the alloys in concentrated nitric acid is the same as that of

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ACCESSION NR: AP4040758

titanium, but in diluted acid it is somewhat lower. Rhodium has no effect on the resistance of titanium in a 1:1 mixture of nitric acid with hydrochloric acid. Rhodium improves considerably the resistance of titanium in hydrofluoric acid and its mixture with nitric acid, but the dissolution rates remain very high. In a 1:1 mixture of nitric and hydrofluoric acids, the dissolution rate of an alloy with 10 at% Rh is, for instance, 6.32 mg/cm^2·min, while that of unalloyed titanium is 28.58 mg/cm^2·min. Orig. art. has: 2 figures.

ASSOCIATION: Institut metallokeramiki i spetssplavov AN UkrRSR (Institute of Powder Metallurgy and Special Alloys, AN UkrRSR)

SUBMITTED: 29Jun63 ATD PRESS: 3056 ENCL: 00

SUB CODE: MM NO REF SOV: 005 OTHER: 000

Card 2/2

L 27503-66 EWP(m)/T/EWP(t)/ETI IJP(c) JD/JG/GS

ACC NR: AT6012365 SOURCE CODE: UR/0000/65/000/000/0025/0029

54
B+1

AUTHORS: Yeremenko, V. N.; Shtepa, T. D.; Gritsenko, E. Ye.

ORG: none

TITLE: Intermediate phases in alloys of titanium with iridium and rhodium 18 27 27 27

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th. Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 25-29

TOPIC TAGS: titanium, iridium, rhodium, alloy phase diagram, crystal lattice

ABSTRACT: The phase diagrams of the binary systems Ti--Ir, over the whole concentration region, and Ti--Rh from 40--100 at. % Rh were determined (see Figs. 1 and 2). The diagrams were constructed on the basis of microstructural and x-ray analysis data. Photographs of alloy polished sections are presented. It was found that the system Ti--Ir exhibits three intermediate phases: γ, δ, and ε. The crystal lattice of each intermediate phase was determined. The system Ti--Rh exhibits two intermediate phases: ε and δ. The latter phase, at an Rh content of 57 to 60 at.%, suffers a rearrangement, the nature of which is not yet clear and which requires

Card 1/2

L 27503-66

ACC NR: AT6012365

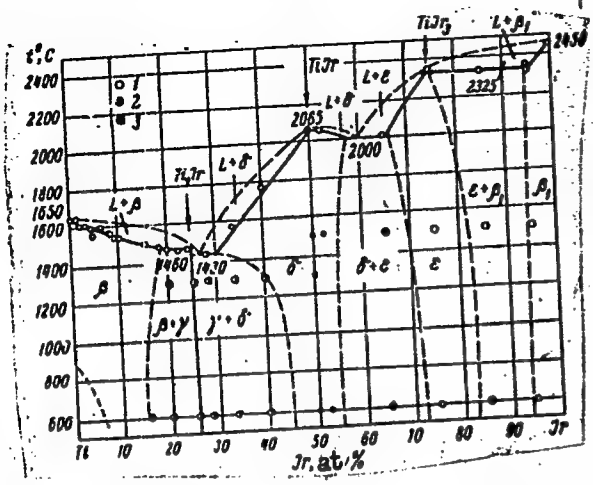

Fig. 1. Preliminary phase diagram of the system Ti--Ir. 1 - single-phase alloys; 2 - two-phase alloys; 3 - alloys which undergo a transformation in the solid state.

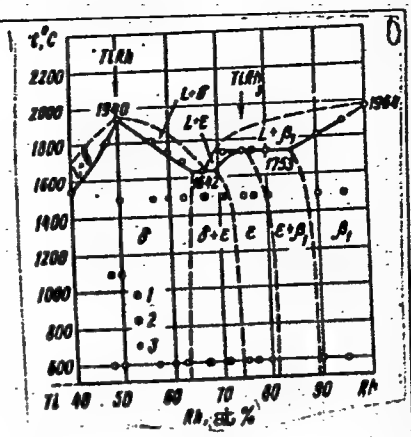

Fig. 2. Preliminary phase diagram of the system Ti--Rh. 1 - single-phase alloys; 2 - two-phase alloys; 3 - alloys which undergo a transformation in the solid state.

further study. Orig. art. has: 3 figures.

SUB CODE: 11/ SUBM DATE: 02Dec65/ OTH REF: 002

Card 2/2 BKG

ACC NR: AP6020963 (A) SOURCE CODE: UR/0226/66/000/006/0068/0072

AUTHOR: Yeremenko, V. N.; Shtepa, T. D.; Sirotenko, V. G.

ORG: Institute for Problems in the Science of Materials, AN UkrSSR (Institut problem materialovedeniya, AN USSR)

TITLE: Intermediate phases in alloys of titanium with iridium, rhodium, and osmium

SOURCE: Poroshkovaya metallurgiya, no. 6, 1966, 68-72

TOPIC TAGS: titanium alloy, rhodium alloy, osmium alloy, iridium alloy, ~~alloy phase~~, monoclinal structure, intermediate phase, PHASE COMPOSITION, ALLOY PHASE DIAGRAM

ABSTRACT: The authors investigated the alloys Ti-Ir, Ti-Rh, Ti-Os throughout the concentration range. The structures and some properties of the intermediate phases formed in these alloys were studied. The δ-phase was found for the first time in the Ti-Rh alloy, and it has been shown as a monoclinal structure with

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L 43774-66

ACC NR: AP6020963

The parameters $a=2,96\pm0,03$ A, $b=2,86\pm0,03$ A, $c=3,41\pm0,02$ A and $\beta=90°37'$. Orig. art. has: 2 tables. [Based on authors' abstract] [AM]

SUB CODE: 11/ SUBM DATE: 19Mar66/ ORIG REF: 002/ OTH REF: 007/

Card 2/2

SHTEPA, V. I.

20822. Shtepa, V. I. Kachestvo soli dlya maslode liya. --V ogli V. N. Shtepa. Sbornik dokladov Pervoy Vsesoyuz. Konf-tsii po moloch. delu. M., 1949, s. 174-79.

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1949.

NORIN, B.N.; SHTEPA, V.S.

Research works on the vegetation of the Soviet North. Bot.zhur.40 no.4:636-639 Jl-Ag'55. (MLRA 8:11)

1. Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, (Russia, Northern--Botany)

SHTEPA, V.S.

Conference on the problem of forest conservation on the northern limits and tundra shelterbelt afforestation. Bot.zhur.40 no.6: 917-921 N-D '55. (MIRA 9:4)

1.Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, Leningrad.
(Forests and forestry) (Windbreaks, shelterbelts, etc.)

TIKHOMIROV, B.A.; SHTEPA, V.S.

Characteristics of the forest outposts in the Lower Lena Valley. Bot.zhur.41 no.8:1107-1122 Ag '56. (MLRA 9:12)

1. Botanicheskiy institut imeni V.L.Komarova Akademii nauk SSSR, Leningrad.
(Lena Valley--Forests and forestry)

TIKHOMIROV, B.A.; SHAMURIN, V.F.; SHTEPA, V.S.

Temperature of Arctic plants. Izv. AN SSSR. Ser. biol. no.3:429-442 My-Je '60. (MIRA 13:7)

1. Botanical Institute, Academy of Sciences of the U.S.S.R., Leningrad.
(ARCTIC REGIONS--PLANT TEMPERATURE)

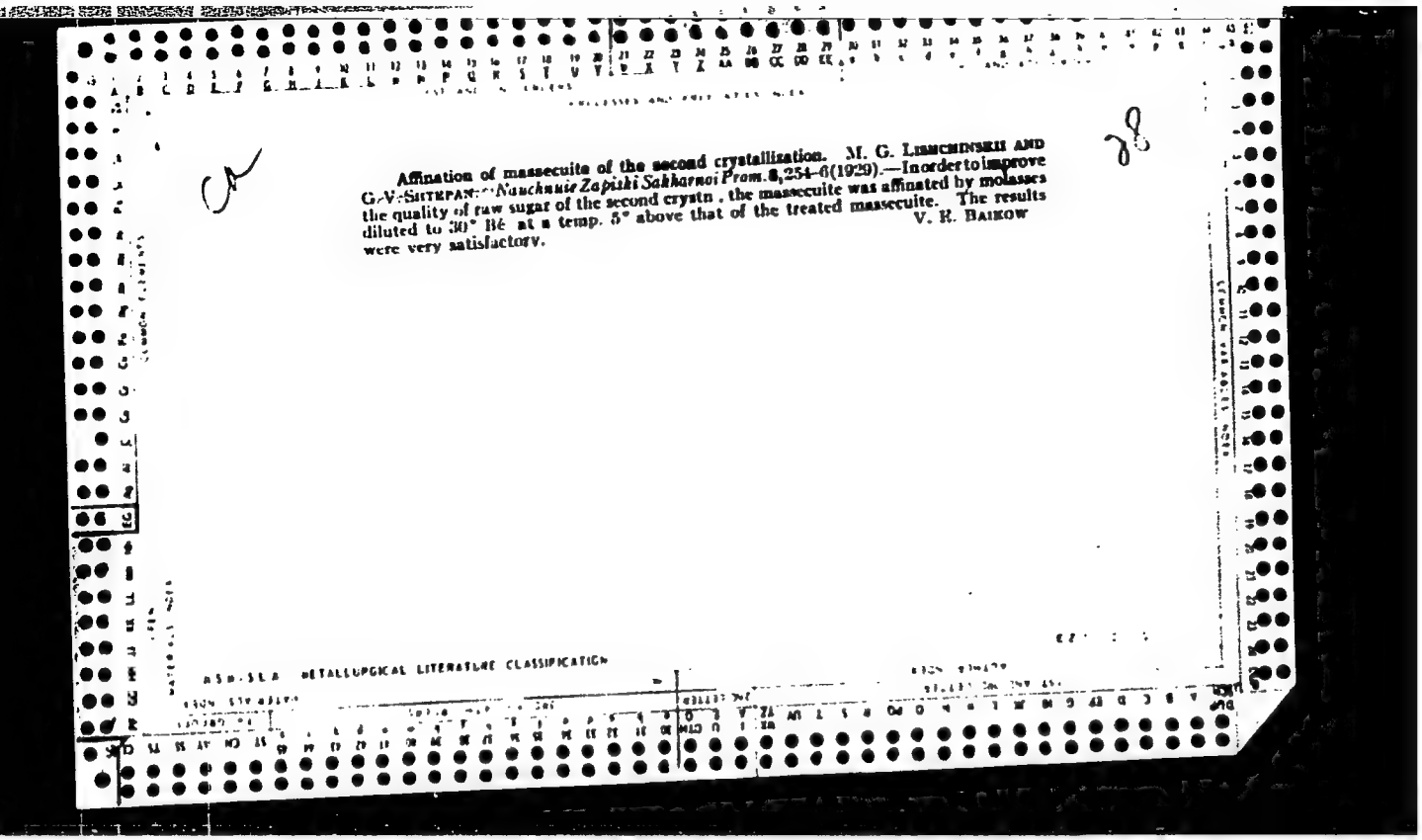
BERLOVSKIY, V.M., inzh.; SHEPA, Ye.P., inzh.; TRET'YAKOVA, I.V., inzh.; MINEVICH, A.B., inzh.

Generator-motor unit with parallel power transmission for mine hoisting systems. Elektrotekhnika 36 no.6:29-32 Je '65. (MIRA 18:7)

BERLOVSKIY, V.M., inzh.; BORZYAK, Yu.G., inzh.; SHTEPA, Ye.P., inzh.; MINEVICH, A.B., inzh.

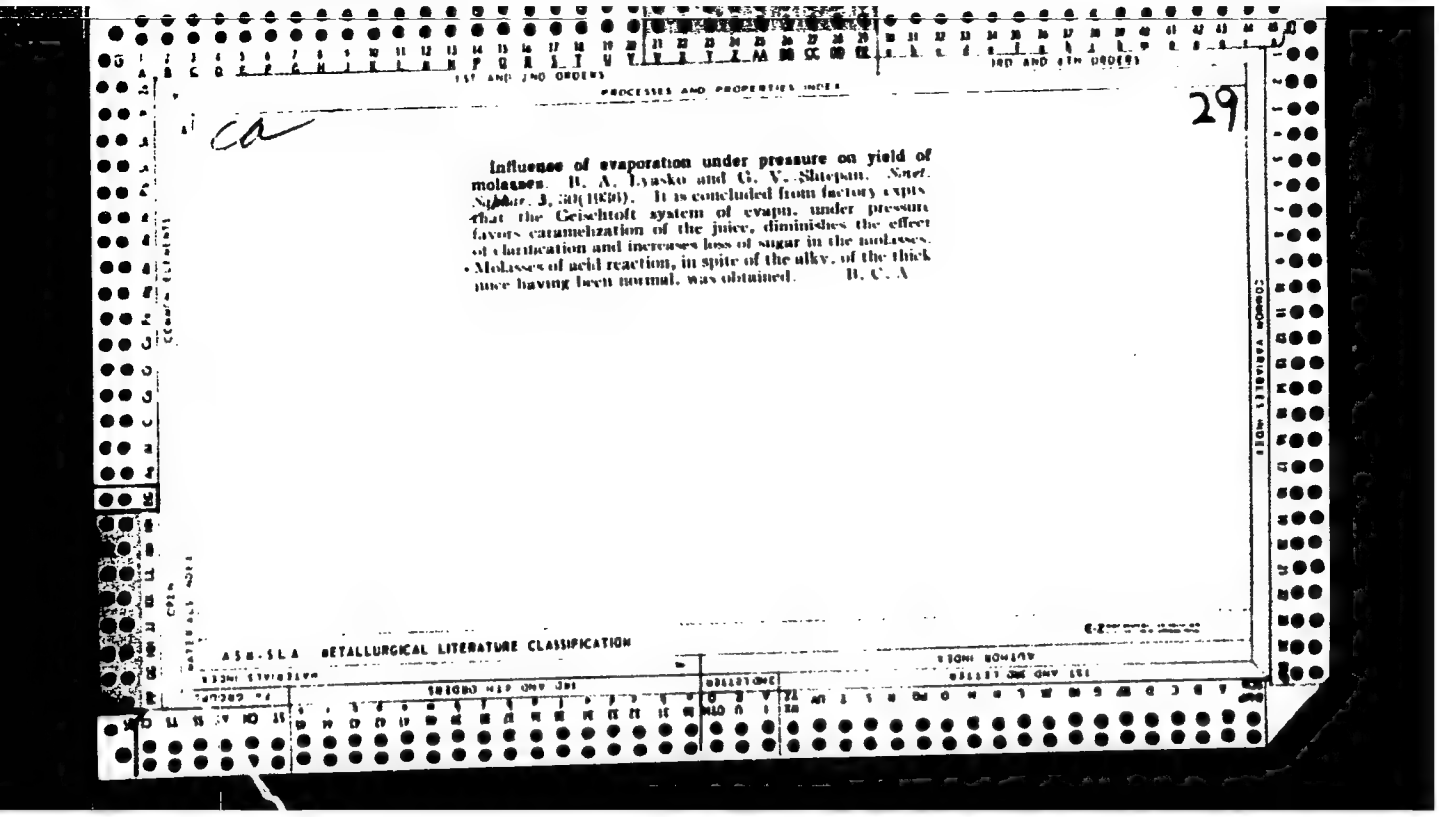
Automated electric driving of mine hoisting machines with a revolving stator. Gor. zhur. no. 12:49-52 D '65. (MIRA 18:12)

1. Khar'kovskiy elektromekhanicheskiy zavod.



Affination of massecuite of the second crystallization. M. G. LIMCHINSKII AND G. V. SHTEPANOV. *Nauchnuie Zapiski Sakharnoi Prom.* 8, 254–6 (1929).—In order to improve the quality of raw sugar of the second crystn., the massecuite was affinated by molasses diluted to 30° Bé at a temp. 5° above that of the treated massecuite. The results were very satisfactory. V. R. BAIKOW

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

29

Ca

Influence of evaporation under pressure on yield of molasses. B. A. Lyasko and G. V. Shtepan. *Sakhar. Prom.* 3, 30(1929). It is concluded from factory expts that the Geischtoff system of evapn. under pressure favors caramelization of the juice, diminishes the effect of clarification and increases loss of sugar in the molasses. Molasses of acid reaction, in spite of the alky. of the thick juice having been normal, was obtained. B. C. A

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHTEPAN, G.V.

Training of junior chemists. Sakh. prom. 31 no.4:79 Ap '57. (MLRA 10:6)
(Chemists)

SHTEPAN, G.V.

Disinfection of diffusion batteries by formalin. Sakh.prom. 34 no.3:16-17 Mr '60 (MIRA 13:6)
(Diffusers--Disinfection)

L 45495-66

ACC NR: AP6033344 SOURCE CODE: HU/0012/66/000/002/0063/0063

AUTHOR: Stepan, Kalman--Shtepan, K.

ORG: Mechanical Measuring Instrument Works (Mechanikai Meromuszerek Gyara)

TITLE: Miniaturized profile manometers

SOURCE: Meres es automatika, no. 2, 1966, 63

TOPIC TAGS: manometer, pressure measuring instrument

ABSTRACT: The profile manometers developed at Mechanical Measuring Instrument Works were described. They comply with the stipulations of Hungarian Standards MSZ 11 201 and 11 202, and are capable of being operated in corrosive atmospheres. The dimensions of the instruments are 160 x 40 or 80 x 20 mm.; they are based on a Bourdon tube made of properly fatigued and heat-treated tombac. The instruments are of the conventional type except that they contained no geared arc or geared rod. The faceplate is circular, perpendicular to the rotational plane of the needle indicator. A specification and performance list is provided to indicate the operation of the instruments and the ranges in which they are available. Orig. art. has: 1 figure and 1 table. [JPRS: 35,328]

SUB CODE: 14 / SUBM DATE: none / ORIG REF: 001

Card 1/1 UDC: 531.78

BRUSYANTSEV, Nikolay Vasil'yevich, CHERNOZHUKOV, N.I., doktor tekhn.nauk, retsenzent, DAVYDOV, P.I., kand.tekhn.nauk, retsenzent, GULIN, Ye.I. kand.tekhn.nauk, retsenzent, DEMCHENKO, V.S., kand.tekhn.nauk, retsenzent, SHTEPAN, M.G., kand.tekhn.nauk, retsenzent, PAPOK, K.K. doktor tekhn. nauk, red.; NAKHIMSON, V.A., red.izd-va., UVAROVA, A.F., tekhn.red.

[Motor vehicle and tractor fuels and lubricants]. Avtotraktornye topliva i smazochnye materialy. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958 . 340 p. (MIRA 11:9)
(Motor fuels)
(Lubrication and lubricants)